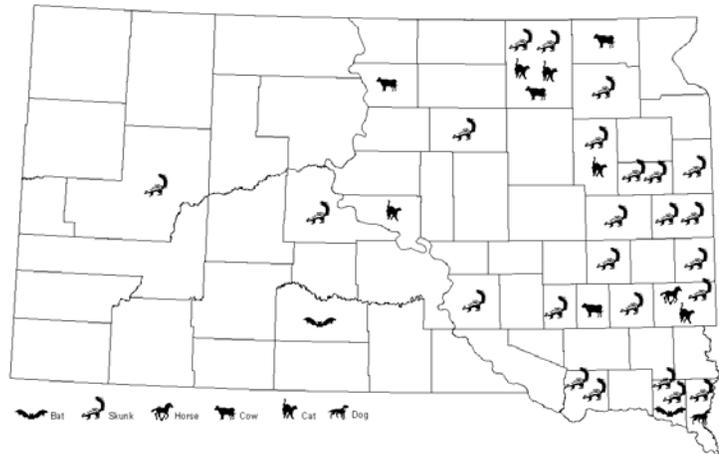


Rabies Surveillance, South Dakota, 2006

Rabies is enzootic in South Dakota. In 2006, 645 animals were submitted for rabies testing with 37 animals testing positive. This was the lowest number of rabid animals reported in South Dakota since at least 1960. The 37 rabies positive animals included 26 wild animals (24 skunks and 2 bats) and 11 domestic animals (5 cats, 4 cattle, 1 dog and 1 horse). There were no human rabies cases in South Dakota in 2006. Our last human case was in 1970.

Animal rabies, South Dakota, 2006



The animals testing negative in 2006 include 72 cattle, 64 bats, 52 raccoons, 23 skunks, 10 deer, 10 horses, 10 opossums, 8 sheep, 6 squirrels, 4 muskrats, 3 coyotes, 2 each fox, gopher, mink, rat, woodchuck, and 1 each beaver, kangaroo, prairie dog and rabbit.

In 2006 rabid animals were detected in 24 South Dakota counties. Animals were submitted for testing from all counties except Bennett, Buffalo, Corson, Jackson, Jones, Sully, Todd and Ziebach. From 1990 through 2006, 1,967 of 16,538 animals tested positive for rabies (11%). During these 17 years animals were submitted for testing from all counties, and rabid animals were detected in all counties except Bennett, Shannon, Todd, and Ziebach. Minnehaha County submitted the most animals for testing (2,711) and Ziebach County submitted the fewest (4).

Since 1990, 27% of rabid animal cases in South Dakota have been domestic animals. Rabid livestock included 232 cattle, 57 horses, 6 sheep, 3 pigs, and 2 goats. There have also been 104 rabid dogs and 94 rabid cats, many of which were unvaccinated strays.

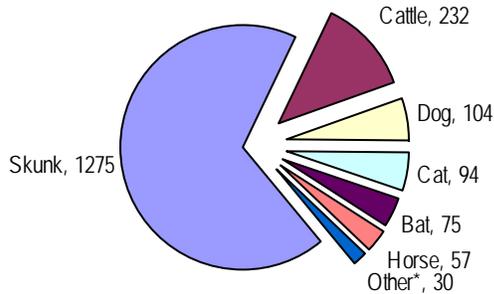
Animals tested and confirmed rabies cases, SD, 1990-2006					
Animal	2006		1990 - 2006		
	Pos	Total tested	Pos	Total tested	% Pos
Skunk	24	47	1275	1877	68%
Cat	5	208	94	4516	2%
Cattle	4	76	232	2246	10%
Bat	2	66	75	2223	3%
Dog	1	130	104	3109	3%
Horse	1	11	57	375	15%
Raccoon	0	52	3	890	0%
Opossum	0	10	1	76	1%
Deer, elk, donkey	0	10	0	98	0%
Sheep	0	8	6	175	3%
Squirrel/chipmunk	0	6	0	65	0%
Rodents*	0	6	0	454	0%
Muskrat	0	4	0	42	0%
Coyote or wolf	0	3	0	60	0%
Woodchuck	0	2	1	19	5%
Weasel/ferret/mink	0	2	0	73	0%
Fox	0	2	8	91	9%
Rabbits and hares	0	1	0	17	0%
Bison	0	0	2	11	18%
Badger	0	0	3	22	14%
Shrew or mole	0	0	1	7	14%
Pig	0	0	3	29	10%
Mountain lion	0	0	0	2	0%
Goat	0	0	2	39	5%
Bobcat or bear	0	0	0	5	0%
Other animals	0	1	2	17	0%
TOTAL	37	645	1967	16538	11%

*Rodents: rat, mouse, prairie dog, gopher, beaver, porcupine, vole

The common skunk (*Mephitis mephitis*) is the enzootic rabies reservoir in South Dakota. Since 1990, 68% of skunks tested have been rabid. Bat rabies is also enzootic in South Dakota with 75 of 2,223 (3%) bats testing positive since 1990.

Rabies is not considered enzootic in other wild animals in South Dakota. Since 1990, however, rabies has been detected in 8 foxes, 3 badgers, 3 raccoons, 2 bison, 1 opossum, 1 shrew and 1 woodchuck. These other animals are likely spillover rabies following exposure to rabid skunks.

Rabid animals, South Dakota 1990-2006



*Others include fox 8, sheep 6, raccoon 3, pig 3, badger 3, goat 2, bison 2, opossum 1, woodchuck 1, shrew 1.

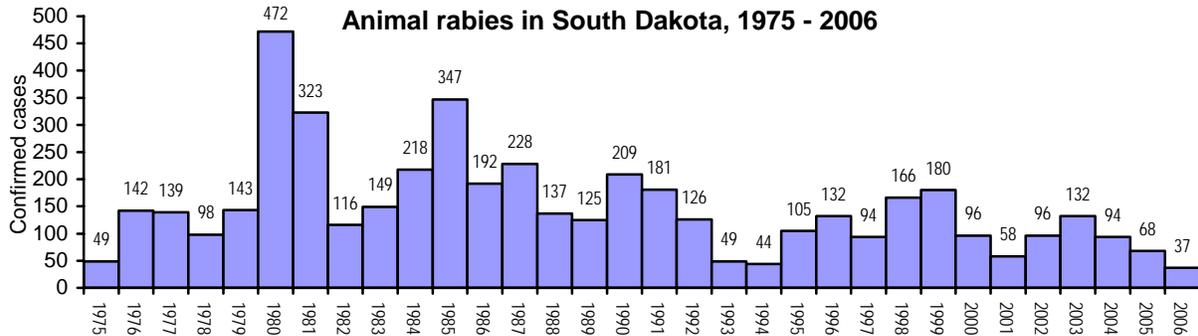
Although rabid animal events occur throughout the year in South Dakota, most rabies events occur during the spring and summer months.

Nationally there have been 23 human rabies cases in the United States since 2000. Seventeen of the human cases (74%) have been associated with a bat-rabies virus, 5 (22%) were dog virus (all foreign imports), and 1 (4%) was a raccoon virus variant. These human rabies cases were from Arkansas, California (5), Florida, Georgia, Indiana, Iowa, Minnesota, Mississippi, New York, Oklahoma, Puerto Rico, Tennessee, Texas (4), Virginia and Wisconsin (2).

The latest national animal rabies surveillance information reported is for year 2005 (Blanton, et al., 2006). Nationally, there were 6,417 cases of animal rabies reported in 2005. According to Blanton 92% of the rabies cases were wild animals and 8% were domestic animals. Nationally

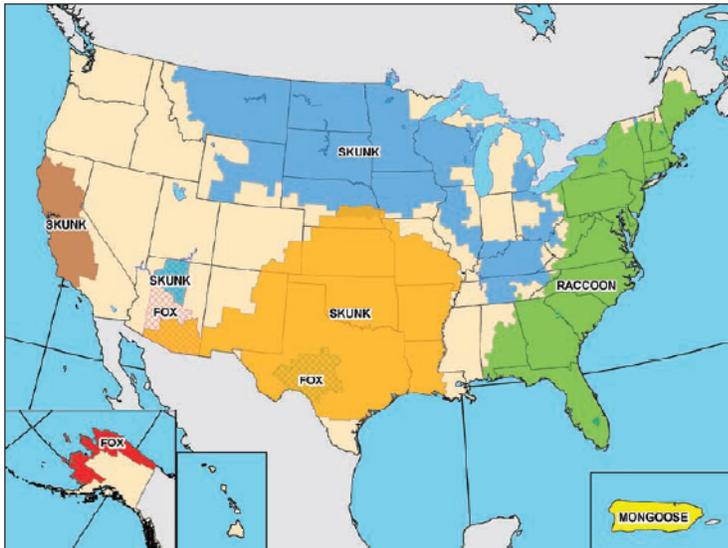
County	2006		1990 – 2006		
	Pos	Neg	Pos	Neg	% Pos
Aurora	0	5	27	100	21%
Beadle	0	10	58	260	18%
Bennett	0	0	0	25	0%
Bon Homme	2	5	16	102	14%
Brookings	2	34	80	750	10%
Brown	5	28	82	500	14%
Brule	1	13	23	151	13%
Buffalo	0	0	6	25	19%
Butte	0	13	38	291	12%
Campbell	0	1	22	65	25%
Charles Mix	0	15	38	211	15%
Clark	2	7	41	119	26%
Clay	3	8	10	146	6%
Codington	0	19	59	363	14%
Corson	0	0	7	24	23%
Custer	0	1	4	50	7%
Davison	1	15	48	481	9%
Day	1	8	54	164	25%
Deuel	1	11	59	278	18%
Dewey	0	1	25	79	24%
Douglas	0	4	25	111	18%
Edmunds	0	7	19	108	15%
Fall River	0	4	4	204	2%
Faulk	1	3	26	66	28%
Grant	0	3	34	233	13%
Gregory	0	5	15	128	10%
Haakon	0	1	9	85	10%
Hamlin	2	14	61	188	24%
Hand	0	3	31	109	22%
Hanson	1	1	15	69	18%
Harding	0	1	11	38	22%
Hughes	1	25	39	359	10%
Hutchinson	0	17	68	323	17%
Hyde	0	3	20	112	15%
Jackson	0	0	2	90	2%
Jerauld	0	3	18	77	19%
Jones	0	0	3	26	10%
Kingsbury	1	11	67	268	20%
Lake	0	22	42	282	13%
Lawrence	0	12	20	202	9%
Lincoln	0	12	14	277	5%
Lyman	0	2	2	65	3%
Marshall	1	5	34	150	18%
McCook	1	12	42	209	17%
McPherson	0	5	35	149	19%
Meade	1	2	30	279	10%
Mellette	1	2	2	20	9%
Miner	1	7	29	113	20%
Minnehaha	3	72	98	2613	4%
Moody	1	13	43	185	19%
Pennington	0	56	46	1237	4%
Perkins	0	1	11	48	19%
Potter	0	1	11	42	21%
Roberts	0	12	47	299	14%
Sanborn	0	1	26	88	23%
Shannon	0	1	0	60	0%
Spink	0	2	28	162	15%
Stanley	1	2	5	28	15%
Sully	0	0	7	19	27%
Todd	0	0	0	91	0%
Tripp	0	10	17	181	9%
Turner	0	19	45	350	11%
Union	2	8	9	153	6%
Walworth	1	22	43	371	10%
Yankton	0	8	17	216	7%
Ziebach	0	0	0	4	0%
South Dakota	37	608	1867	14671	11%

domestic animals included 269 cats, 93 cattle, 76 dogs, 47 horses/mules, 6 goats and 3 sheep. In 2005 South Dakota had 14 rabid cattle, the most of any state in the country, and 6 rabid horses, second most in the country. Nationally, wild animals testing positive for rabies included 2,534 raccoons, 1,478 skunks, 1,408 bats, 376 foxes, 61 mongooses, 25 groundhogs, 18 bobcats, 8 coyotes, 7 deer, 3 beavers and 1 opossum.



Two laboratories test for rabies in South Dakota: (1) the Animal Disease Research Diagnostic Laboratory (ADRDL) in Brookings, and (2) the State Public Health Laboratory (SDPHL) in Pierre. Both laboratories use the direct fluorescent antibody (DFA) technique. The case definition of a confirmed animal rabies case is a positive DFA test, performed preferably on central nervous system tissue, or isolation of the rabies virus in cell culture or in a laboratory animal. Human serum rabies antibody titers on previously vaccinated people may be ordered through the Public Health Laboratory.

Distribution of major rabies virus variants among wild terrestrial reservoirs in the United States (Blanton et al, 2006)



Rabies consultations are available from the Office of Disease Prevention, South Dakota Department of Health, 7 days a week. Consultations are based on current Centers for Disease Control and Prevention (CDC) recommendations*. We strive to recommend appropriate rabies prevention measures and to minimize unnecessary and inappropriate post-exposure testing and prophylactic treatment.

References and resources

*Centers for Disease Control and Prevention. Human rabies prevention – United States, 1999: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999; 48 (RR-1). www.cdc.gov/mmwr/PDF/rr/rr4801.pdf

Centers for Disease Control and Prevention. Compendium of animal rabies prevention and control, 2006: National Association of State Public Health Veterinarians, Inc. MMWR 2006; 55 (RR-5). www.cdc.gov/mmwr/PDF/rr/rr5505.pdf

Centers for Disease Control and Prevention. Compendium of measures to prevent disease associated with animals in public settings, 2005: National Association of State Public Health Veterinarians, Inc. MMWR 2006; 54 (RR-4). www.cdc.gov/mmwr/PDF/rr/rr5404.pdf

Blanton, JD, JW Krebs, CA Hanlon and CE Rupprecht. 2006. Rabies surveillance in the United States during 2005. Journal of the American Veterinary Medical Association 229: 1897-1911.

Addresses, telephone numbers and Websites

Department of Health Office of Disease Prevention (rabies consultations)

615 East Fourth Street
Pierre, SD 57501-1700
Phone: 1-800-592-1861 or 605-773-3737;
after hours cell phone 605-280-4810
Web: www.state.sd.us/doh/Pubs/rabies.htm

Department of Health, Public Health Laboratory (rabies testing)

615 East Fourth Street
Pierre, SD 57501-1700
Phone: 1-800-592-1861 or 605-773-3368
Web: www.state.sd.us/doh/Lab/rabies.htm

CDC Rabies homepage:

www.cdc.gov/ncidod/dvrd/rabies

Animal Disease Research and Diagnostic Laboratory (rabies testing)

Box 2175, North Campus Drive
South Dakota State University
Brookings, SD 57007-1396
Phone: 605-688-5171
Web: <http://vetsci.sdstate.edu>

South Dakota Animal Industry Board

(livestock and other animal veterinary and regulatory issues)
441 S. Fort Street, Pierre, SD 57501-4503
Phone: 605-773-3321
Web: www.state.sd.us/aib

South Dakota Bat Working Group

<http://nathist.sdstate.edu/SDBWG/SDBWG.html>



Lon Kightlinger, MSPH, Ph.D.
State Epidemiologist
South Dakota Department of Health

Two rabies laboratories in South Dakota: Brookings and Pierre

Brookings: Submission of rabies specimens to SDSU ADRDL

Box 2175, North Campus Drive
South Dakota State University
Brookings, SD 57007-1396

To meet CDC guidelines for rabies testing, the ENTIRE BRAIN WITH BRAINSTEM must be submitted FRESH to the laboratory. This will allow for testing of both sides of the brain and brainstem as per CDC guidelines. ADRDL staff will fix the brain from domestic animals and some wild animals in formalin for histopathology examination after rabies testing has been completed.

1. Package the brain in a sterile plastic bag placed inside a crush-proof container. Submit to the lab in an appropriate leak-proof, insulated shipping container with adequate ice packs to keep specimen chilled during shipping. DO NOT FREEZE the fresh brain.
2. As always, the laboratory WILL NOT ACCEPT LIVE ANIMALS for rabies testing. Whole bodies, complete heads, or removed brains are all acceptable specimens for submission. ADRDL staff will remove brains upon arrival, at no additional charge.
3. Fill out the standard ADRDL submission form with complete information, including the rabies section at the bottom. Clearly identify as a rabies suspect and clearly indicate if human exposure has occurred with the route of exposure and date included. A referring veterinarian must be listed on the form. The submission form can be downloaded from <http://vetsci.sdstate.edu>.
4. Samples arriving to the laboratory **before 12 PM (noon)** will have results available the same day. Samples arriving **after 12 PM (noon)** will be tested the next business day.
5. Additional tests, if requested, will not be performed on a rabies suspect case until the rabies FA has been completed and is negative.
6. The ADRDL is open 8 AM to 5 PM Monday through Friday, excluding holidays. A SPECIMEN DROP-OFF COOLER is accessible to the public 24 hours a day, so samples can be delivered to the lab on nights or weekends and left in this cooler for testing the next business day. The cooler is adjacent to the loading dock on the east side of the building. The on-call staff can be reached at (605)690-1576 if problems or questions arise.
7. Testing after hours, weekends or holidays IS NOT AVAILABLE at the ADRDL. See information from the State Public Health Lab.

Pierre: Submission of animal specimens to the South Dakota Public Health Laboratory for Rabies Testing

615 East Fourth Street
Pierre, SD 57501-1700

1. Call the South Dakota Department of Health to report the possible exposure and to seek guidance in how to submit the animal for testing. Call 800-592-1861 or 605-773-3737 during regular business hours. For emergencies, after hours, on weekends or holidays, call the mobile phone (605-280-4810). Staff will be able to answer questions and concerns. If at all possible, please call before destroying the suspect animal.
2. Call one of the above numbers to make special arrangements for shipping an animal specimen after regular business hours, on weekends or holidays.
3. Notify the South Dakota Public Health Laboratory (SDPHL) of all impending shipments of animal specimens before actual transport. Call the lab at 800-592-1861 or 605-773-3368 during regular business hours. After hours, on weekends or holidays, contact an individual listed in #1.
4. Be careful not to destroy the head of the animal by gunshot or bludgeoning. Take the animal to a veterinarian for removal of the head in order to preserve the brain tissue and prevent unnecessary exposure to a diseased animal.
5. Include with the specimen, a SDPHL submission form with the following information:
 - Name and birth date of person exposed (or owner if pet exposure)
 - Type of animal and exposure, including exposure date/suspect animal death date
 - Symptoms and/or unusual behavior of animal
 - Name and phone number of veterinarian or physician(Submission forms are available from veterinarians or physicians)
6. Wrap animal head carefully and either ship or deliver directly to the lab in an insulated container with ice or ice packs. SPECIMEN MUST NOT BE FROZEN. Transport the specimen by the quickest means possible.

Direct additional questions to SDPHL 605-773-3368.

www.state.sd.us/doh/Lab/rabies.htm

